

IN THE CLAIMS

Please ~~cancel~~ claims 20-23 and 27-30, without prejudice.

Please ~~amend~~ claims 1, 13, 17, and 18 in the following manner:

1. A method of producing on-demand, semi-solid material for a casting process, said method comprising the following steps:

heating a metal alloy until it reaches a molten state;

transferring an amount of said metal alloy to a vessel;

cooling said amount of metal alloy in said vessel;

applying an electromagnetic field to said amount of metal alloy for creating a flow pattern of said metal alloy within said vessel while said cooling continues in order to create a slurry billet; and

discharging said slurry billet from said vessel into a shot sleeve of a casting machine.

af
sub
31

13. The method of claim 1 which further includes the step of moving said vessel into a stator before said transferring step is performed.

af

17. The method of claim 1 wherein said stator is a multi-phase, multiple pole stator causing circumferential flow in the metal alloy.

af

18. The method of claim 1 wherein said stator is a multi-phase, multiple pole stator causing longitudinal flow in the metal alloy.

Please add the following eight claims as new claims 31-38:

10b
03

31. A method of producing on-demand, semi-solid material for a casting process, said method comprising the following steps:
heating a metal alloy until it reaches a molten state;
transferring an amount of said metal alloy to a vessel;
cooling said amount of metal alloy in said vessel;
applying an electromagnetic field to said amount of metal alloy by the use of a stator for stirring said metal alloy within said vessel while said cooling continues in order to create a slurry billet, a voltage being applied to said stator, the level of said voltage determining the stirring torque applied to said metal alloy;
changing the voltage level applied to said stator so as to change the stirring torque applied to said metal alloy; and
discharging said slurry billet from said vessel into a shot sleeve of a casting machine.

27

32. The method of claim 31 wherein said voltage level is changed based upon the sensing of an electric load feedback signal.

33. The method of claim 31 wherein said voltage level is changed based upon the sensing of a temperature measurement signal from said metal alloy.

34. The method of claim 31 which further includes the step of changing the stirring torque applied to said metal alloy based upon the viscosity of said metal alloy in the vessel.

51b
BY

35. A method of producing on-demand, semi-solid material for a casting process, said method comprising the following steps:
heating a metal alloy until it reaches a molten state;
transferring an amount of said metal alloy to a vessel;

assembling a covering cap to said vessel in order to permit the use of an inert gas to control contamination;

cooling said amount of metal alloy in said vessel;

applying an electromagnetic field to said amount of metal alloy by the use of a stator for stirring said metal alloy within said vessel while said cooling continues in order to create a slurry billet, a voltage being applied to said stator, the level of said voltage determining the stirring torque applied to said metal alloy; and

discharging said slurry billet from said vessel into a shot sleeve of a casting machine.

36. The method of claim 35 which further includes the step of inserting a thermocouple through said covering cap and into said metal alloy for deriving temperature information from said metal alloy.

37. A method of producing on-demand, semi-solid material for a casting process, said method comprising the following steps:

heating a metal alloy until it reaches a molten state;

clamping a thermal jacket around an alloy-receiving vessel;

transferring an amount of said metal alloy to said vessel;

cooling said amount of metal alloy in said vessel;

applying an electromagnetic field to said amount of metal alloy for creating a flow pattern of said metal alloy within said vessel while said cooling continues in order to create a slurry billet; and

discharging said slurry billet from said vessel into a shot sleeve of a casting machine.

38. A method of producing on-demand, semi-solid material for a casting process, said method comprising the following steps:

- heating a metal alloy until it reaches a molten state;
- arranging a plurality of stators around an alloy-receiving vessel, said plurality of stators including at least one rotary stator in combination with at least one linear stator;
- transferring an amount of said metal alloy to said vessel;
- cooling said amount of metal alloy in said vessel;
- applying an electromagnetic field to said amount of metal alloy for creating a flow pattern of said metal alloy within said vessel while said cooling continues in order to create a slurry billet; and
- discharging said slurry billet from said vessel into a shot sleeve of a casting machine.

A7
B5
conf